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Bulletin No 44
April '61

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GEOGRAPHY AND MAP DIVISION

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ABBREVIATIONS

Edited by
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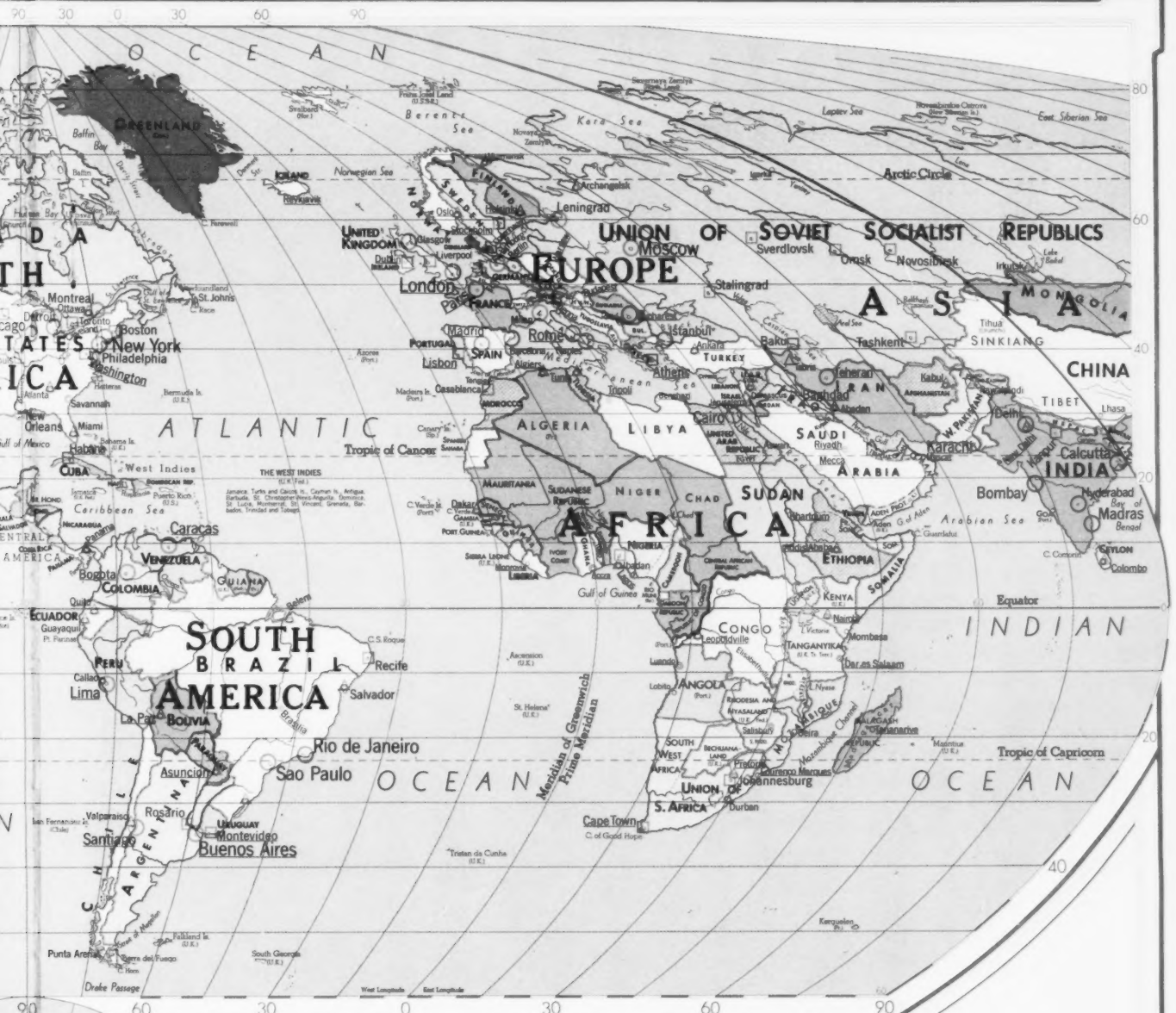

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Consultant
J. RUSSELL SMITH, PH.D.
COLUMBIA UNIVERSITY

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POPULATION (1 inch equals 90,000,000 people)

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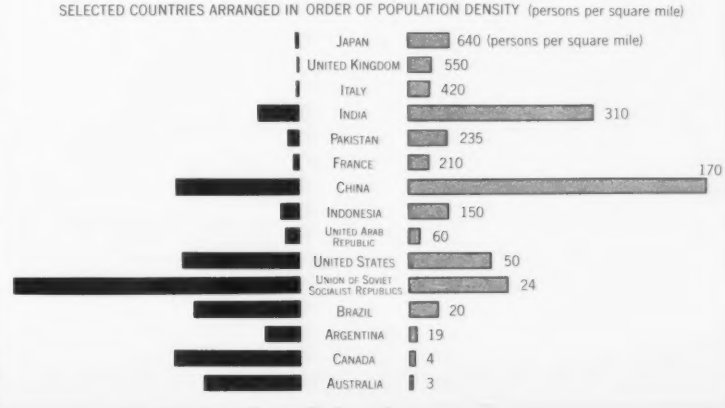

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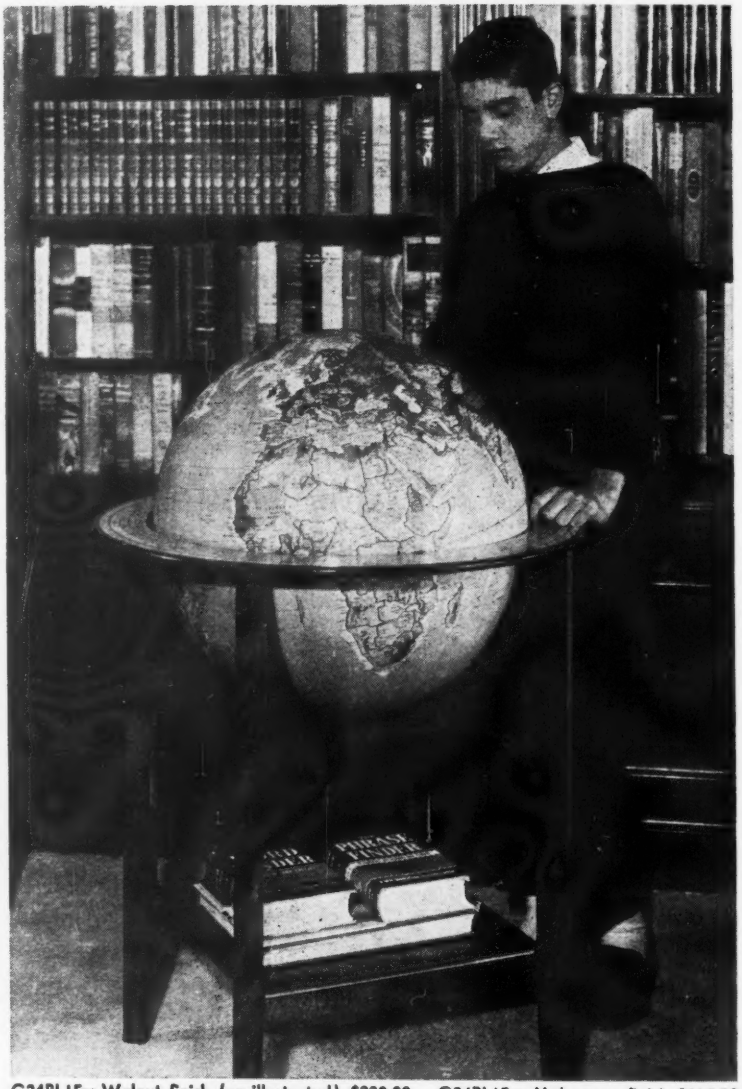

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SPECIAL LIBRARIES ASSOCIATION

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GEOGRAPHY AND MAP DIVISION
CONVENTION PROGRAM
Sheraton-Palace Hotel, San Francisco
May 28-June 1, 1961

Sunday, May 28	12:00 noon - 6:00 P.M. - Registration 4:30 - 8:30 P.M. - Reception, World Trade Club
Monday, May 29	9:30 A.M. - 12 noon - Opening Session Keynote Address: Dr. Lawrence Clark Powell 12:30 - 4:30 P.M. - Luncheon-Business Meeting 5:00 - 7:00 P.M. - Open House, Rand McNally Map Store (Members only)
Tuesday, May 30	General Sessions (No division activities)
Wednesday, May 31	9:30 A.M. - 12:00 noon - Visit to California Historical Society. Dr. Biggs, the Director, will display material and speak. 12:30 - 2 P.M. - Joint luncheon meeting with Transportation, Business and Finance, and Social Sciences. Theme: Problems of Metropolitan Areas. 6:00 - 8:00 P.M. - Convention-Wide Cocktail Party 8:00 P.M. - Banquet
Thursday, June 1	8:30 A.M. - Visit to Bancroft Library, Univ. of Calif., Berkeley - remarks by Dr. George Hammond, Director. Visit to the Univ. of Calif. Rare Book Library, Dr. Kenneth Carpenter, Director. The "De Vries Collection" is here. 12:30 - 2:00 P.M. - Luncheon, Sakara Japanese Gardens, Palo Alto. Speaker: Dr. Joseph Williams, Department of Geography, Stanford University. Afternoon - Visit to the Bender Library (rare books), and to the Hoover Memorial Library, Stanford. Return to San Francisco along the Skyline Drive.

MERIDIONAL NOTES FOR MEMBERS OF THE GEOGRAPHY AND MAP DIVISION IN SAN FRANCISCO FOR THE 52nd ANNUAL SPECIAL LIBRARIES ASSOCIATION CONVENTION

California is a geographic Valhalla. Run, do not walk, to your files and get out "Shaded relief map of California" which appears as Plate I of Bulletin 158, State of California Dept. of Natural Resources. This map, showing the State's natural provinces, is also an example of the map as a work of art. If you fly to San Francisco, fly over the Sierra by day, and look down on the greatest tilted fault-block in North America, of whose granite escarpments John Muir said, "they are as fresh as if just revealed". If you have the leisure to train out, you will either come through the Feather River cañon, over Donner Pass, or up the central valley from the Tehachapis. As geologically-oriented librarians, your eyes will read this landscape and read it well.

San Francisco Bay, and the nine-county region which borders upon it, offers an amazing amount of topological variation. Study your Geologic guidebook of the San Francisco Bay Counties (Bulletin 154, State of California Division of Mines, 1951). Within this relatively small area may be seen rift lakes, tideland deltas, drowned valleys, alluvial fans, block faulting, sedimentary and volcanic surface features, evidences of glaciation and coal beds. The region is no simple thing like the Laurentian shield country. Its bountiful natural features provide an object lesson in the relation of economic to physical geography, distorted as ever by the whims of that late Pleistocene and Holocene mammal, Man. By all the laws of sensible placement, Oakland should be the great port and rail center, and San Francisco, with its expensive-to-build-on hills and near-Venetian isolation, should be the ancillary city, but hardly the commercial and transportation center. History did not work that way.

The cartographic history of the San Francisco extended region is rich and interesting. The open house on Monday evening, May 29, at the Rand McNally Map store, provides everyone with a chance to inspect current cartographic representations of the city, county and region. Being a peninsular city, the chart makers have an opportunity to display their art. Coast and Geodetic Survey charts numbers 5532, 5533, and 5535 delineate the maritime relations of the Bay Area just as the topographic quadrangles spell out the surface features. The historical aspects may be gone into with epicurean satisfaction on Wednesday morning, May 31, when the Division convenes at the mansion-headquarters of the California Historical Society in San Francisco's Victorian Pacific Heights neighborhood. On display for your intimate examination will be early cartography of the San Francisco Bay region. Thursday morning, June 1, members will cross over to the "continental side" of the Bay (as the Eastern side is sometimes actually referred to) for a visit and lecture at Bancroft library on the campus of the University of California. This major center of research on the entire Southwest is rich in cartographic resources, and the original MSS. and printed editions of the explorers' accounts who first and later were on the spot.

It is hard to think of a convention city which can offer so much

both directly and incidentally to geography and map people. It is true that the really major map and other collection concentrations are in the East. The resources in this respect, however, around San Francisco are still formidable. But, unlike many another city, San Francisco (and its larger setting, California) overcompensates in proffering the stuff from which maps are made and geographical books written. While another city is "in the plains", or "essentially Riparian" or "a lake city"; while other regions are "examples of magnificent delta country" or "inter-montane centers", or even "major coastal-shelf-type examples", Northern California offers nearly everything but semi-desert--which the State has in its Southeast.

The San Francisco combination is a hard one to beat, and an unfortunate one to miss: the Convention, with its general sessions and opportunity to meet and hear fellow professionals; the City, with its oriental-spanish-italian-irish-english-german-arabian-african-(et al) cultural aspects and spectacular physical charms; the special trips for members of the Geography and Map division; and the immediate Northern California region, with its historical and cartographical (not to mention its merely scenic) features--spell more for your money. Meteorologists can, incidentally, take professional interest in the climate: it is SO COOL in the Summer!

Theodor B. Yerke

NOTICE

Geography and Map Division members are requested to bring their ideas and suggestions for the 1962 Convention Program to the Annual Business Meeting in San Francisco. Those who can't get there should forward them to Maud Cole who will place them in the hands of next year's Chairman.

SAN FRANCISCO - FUTURES

Interested in a report that was published last summer entitled, "Future Development of the San Francisco Bay Area, 1960-2020." This report was written by the United States Department of Commerce for the U.S. Army Engineer District, San Francisco Corps of Engineers. The report is accompanied by a considerable number of very large colored maps which would be excellent material for an interesting exhibit.

W. Van Royen

AERIAL SURVEYING IN GUATEMALA

by

Richard Lambert*

In 1956, Aero Service Corporation conducted an airborne geophysical survey in northern Guatemala. The area of 14,100 square miles, known as El Petén, includes about three-fifths of the nation, and consists almost wholly of jungle and rain-forest. With the exception of a few scattered villages, El Petén is as uninhabited as it has been since the Maya civilization of the 16th Century.

The survey was made for the Mapping and Mining Department of Guatemala, and for 15 petroleum companies holding concessions and exploration rights in the Petén area. The survey was to produce a detailed map showing the magnetic variations and to locate photographically and geographically the concession boundaries.

Unique methods are required to do this in an unexplored area. Weather conditions prohibit activities except for four or five months of the year. The petroleum companies and Guatemalan government, however, were anxious to obtain data with the greatest possible speed and accuracy.

We chose to use an airborne magnetometer which measures the variations in the earth's magnetic field. The principle involved in this: the earth is considered to be a large magnet, having North and South magnetic poles with magnetic lines of force moving between. With the airborne magnetometer, these deviations and the associated changes in geologic configurations are detected. The second instrument was an aerial mapping camera to record certain predetermined ground points. These points, known as Secondary Control Points, were used as bases or origin points for measurements.

To guide the plane over jungle terrain we chose Shoran, a system similar to radar. Shoran requires a number of strategically-placed ground stations that are used to control the plane's path, by triangulation. The aircraft is a mobile station that sends alternate signals to two ground stations and receives the amplified return signal. The two ground stations form a triangle with the aircraft at all times - therefore, by knowing the time the signal leaves the aircraft and the time it takes to go to the stations and return, we can at all times determine the location of the plane with high accuracy. Such factors

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*the author was Project Manager for Aero Service Corporation on the Guatemala Survey. He is now General Supervisor, Geophysical Data Section, in the company's home offices at 210 East Courtland Street, Philadelphia 20, Pennsylvania.

as weather, temperature, clouds, humidity and station distance, as well as numerous smaller factors, are recorded and used later for computing the final results.

The following personnel were assigned for the survey: project manager, project engineer, chief electronics engineer, ground shoran engineer, geodesist, pilot, copilot, aerial photographer, navigator, shoran operators and technicians, data chief, photo lab technicians, shoran data compilers, and numerous locally-hired technicians, guides and interpreters.

In addition to passports and visas, there were special requirements: for instance, the pilots had to pass flying examinations to prove competency under local laws; our radio and electronics engineers needed new radio licenses for themselves and their equipment; and permits for the aerial photography of Guatemalan territory were a must.

While personnel were being chosen and briefed in Philadelphia, others were selecting equipment and materials for the job. Overhaul, field testing and checking were performed up to the last possible minute, including exposure to conditions similar to the Guatemalan climate. During the two or three weeks required for all men and material to arrive at our main base of operations in Guatemala City, the early arrivals were busy preparing for the project. Meetings with oil company representatives, government officials, and local technicians were frequent.

It proved quite difficult to obtain customs clearances, for in many cases the customs laws had to be rewritten to cover the unusual items of equipment and survey gear we brought into the country.

As equipment cleared customs, it was moved to our workshops. We were able to combine our living and working areas in Guatemala City by use of a very large, modern house. Included were: an electrical shop, photo laboratory, data processing offices, storage rooms and living quarters for all crews. Here we unpacked, tested and repaired equipment broken during shipment. (Surprisingly little was damaged.) Finally the instruments were re-calibrated and made ready for field use. We needed about a month to clear customs and prepare all gear for field operations.

We also called on the Governors of the local states to advise them of the forthcoming survey. These calls were useful in helping the Governors' aides to advise local communities that strangers would be in the area. Unexpected stops in small communities often caused considerable consternation. The hiring of local guides and interpreters was completed during these latter stages of mobilization.

The selection of permanent Shoran sites was not done until the field reconnaissance was completed by the Project engineer, who had responsibility for selection and installation of the stations. The ground Shoran chief accompanied the project engineer on the trips, as he was to be responsible for maintaining the stations, once operational. Preliminary

planning was done at our base with the best available maps and aerial photographs; however, very few of these existed, and most were undependable. Field reconnaissance was therefore necessary. The first step was selection of local guides and interpreters. Usually two interpreters were required: one to translate from English to Spanish, another from Spanish into the local Indian dialects.

The Shoran stations were located on the highest mountain peaks, as close to the survey area as possible. The Shoran signal requires an unobstructed path to the survey plane, and the path cannot usually exceed 200 miles.

We obtained transportation to the areas and in them, carrying enough camping gear and survey instruments for a few weeks of operation. We usually carried weapons for protection against wild animals, such as jaguars. We never saw any jaguars, but hunting them is a popular sport in Guatemala.

Because most of our stations were almost inaccessible, our guides were chosen carefully for dependability and competence. They in turn selected their assistants and men needed for carrying equipment. Because of the thick jungle, pack animals were not used. A large number of Indians were hired to cut path and clear camp sites. They also cleared the Shoran sites. A Shoran station includes about 1500 pounds of equipment, and foodstuffs and camping gear bring the total weight to over two tons. Movement of this much material without trucks or pack animals is a considerable problem.

Our first station was located in the southwestern part of El Petén, in a mountain belt along the southern portion of the survey area. We used about 20 Indian laborers for the initial installation--all of the gear had to be hand-packed and carried to the site, with paths being cut as we moved. When the station had been installed, tested and in operating condition, the main party returned to base leaving two station operators and an interpreter to run the camp until the job was complete or the station to be moved. The Project Engineer wrote a report giving directions for future surveying parties, to help them get to the site. The official route description for our first site at Mount Bovi (code name Hue Hue, pronounced Way Way) is as follows:

"From Guatemala City go to Huehuetenango. A car may be taken. The roads are fairly good but the better part of a day will be needed. By air with the local airlines is better and will require only about three hours.

"At Huehuetenango stay at the Zacaleu Hotel and wire ahead to Padre Jose Halpern in care of the Mission of Santa Eulalia, asking for mules to be sent down to Istopac. Hire a car or truck at Huehuetenango--Mr. Toeng, manager of the Hotel, will help you with the hire and the wire.

"Depart from Huehuetenango as early as possible in the morning for

PHOTO ONE - El Peten jungle, Guatemala. This photo from Shoran station Buena Vista looks south toward Guatemala City.

PHOTO TWO - Mt. Bovi (Hue Hue) Shoran station, located at an elevation of approximately 11,500 feet.

PHOTO THREE - Shoran station at Coban, set up in dense jungle and undergrowth.

Istopac. It's about a 3-hour trip. Pick up the mules at Istopac and proceed via San Homa, where a meal may be obtained during the trip at the nearby Mission of Santa Eulalia. After eating, proceed on towards San Mateo--this portion of the trip takes about 8 hours.

"Turn off the road to the right at a point about 30 miles from San Mateo, at a spot in the road marked with two wooden crosses. Follow the trail through the forest, climbing for 2 hours in a southeasterly direction to a ridge running north-south and proceed to the summit. Look for a concrete monument, flush with the ground, with a brass disc embedded in the center. This is Station Mount Bovi."

Except for the scenic view, there is nothing more at the site. Water is available at the bottom of the mountain but must be boiled and treated with purifying chemicals. No vicious animals were seen. The days are warm and sunny, except in the rainy season, and the nights are cool.

In eastern Guatemala, near the Lake of Izabal, on a mountain peak known as San Gil, we located another Shoran station with the code name of Izabal. This station was located on a ridge south of the town of Livingston. The camp site living area consisted of a platform of logs, similar to a raft, raised off the ground about 6 feet. The summit was so sharp and razor-backed that a flat spot was not available.

A similar raft platform was built for a helicopter landing port near the camp area. Helicopters were our only method for supply and installation at this site, including food and water. On rainy days, water was caught for drinking and washing, but many dry days were experienced before the rainy season began. Heavy fog and clouds delayed helicopter service at times, and our crew had waterless days, living on canned juices until rain or the helicopter returned. Instructions for this station read:

"To reach the Izabal station, take a plane from Guatemala City to Puerto Barrios. Trains do run but the trip takes about 12 hours. From Puerto Barrios go to Livingston by boat and thence by helicopter to Izabal. In clear dry weather the helicopter trip takes about a half-hour.

"The surface route, though extremely difficult, was used when we removed the station. Bad flying weather made air transport impossible. The surface route starts at Puerto Barrios by boat, then one proceeds by a small launch, then a canoe and finally on foot to Livingston. By boat again, one proceeds through the Lake of El Gofete to the base of the hill and along the trail to the summit. This trail is very long and treacherous, consisting of thick jungle, swamp, marsh and water. The overland trip takes from six to eight days, four or five boats and from 20 to 40 men."

Three other Shoran sites were located throughout the survey vicinity.

One was across the border in British Honduras. The two remaining positions were Coban, in south-central Guatemala, and on an escarpment in north-central Guatemala, in the center of the El Petén jungle.

The flying of the survey is as difficult and dangerous as any of the other phases. Rigid safety rules must be observed, because the survey plane is always flying at one thousand feet or less over the jungle terrain, guided by the Shoran instruments. To take advantage of favorable weather, the crew normally flew every day. It was not unusual to work 10 or 20 days without a break, and flights ordinarily lasted from six to eight hours daily. These long hours at low altitude, in turbulent air over dense jungle, operating delicate electronic equipment require the greatest skill and endurance. In addition, the ground compilation staff spent two or three hours editing and checking data for each hour the flight crew spent in the air. Since the plane must be ready for flying on all good weather days, much of the repairs and maintenance were done at night so that the plane might be ready to go at dawn.

Often we made schedule overnight stops, mainly for refuelling the aircraft and to be near the survey area early the next morning, to get the best advantage of good weather. On one such stop, at an airstrip near Tikal, we visited the ancient ruins of the one time capital city of the now extinct Mayan civilization. Our crew was fortunate enough to be given a guided tour by several prominent archaeologists, then studying the area, which has been partially restored.

On another overnight stop, we expected to find shelter for sleeping, but instead found nothing but great swarms of inhospitable mosquitoes. The next day saw a very tired and badly bitten crew.

A jaguar-hunting expedition was planned for still another overnight stop at a jungle strip. We saw only snakes, wild parrots, many insects and the ever-present mosquitoes. These side trips were the only relaxation available, as holidays were few and far between.

One break in the routine occurred when one of the oil company helicopters was lost, carrying a pilot and two geologists. The craft was found by another helicopter after three days, but that one also crashed. A third helicopter landed on a nearby river bank and rescued all the crews, who were in good condition except for being tired, hungry, bruised and mosquito-bitten. For ourselves, we had no emergencies, and except for running low on fuel several times, had no trouble on any flight.

Good radio communications are vital to our survey work. Each Shoran station had a two-way radio, as did the plane and base camp. Early each morning a communications check was made with all stations, calling each at a predetermined time and sequence. At this time a weather report was obtained from each, and a decision made as to which areas to fly and which stations to use that day. After the weather

PHOTO FOUR - The erupting Mt. Fuego. This photo taken with our mapping camera shortly after the volcano erupted.

check, requests for food and spare parts were passed along, and information on the progress of the project given to the men in isolated stations. In the evenings, calls were made to all the Shoran stations, giving instructions for the time and rotation of the morning reports. Of course these two communications checks daily were only the minimum. Actually, more were made, and the sets left on standby all day for any possible emergencies.

During one early-morning communications check, the Shoran operator broke off his report in the middle of a word, causing us to suspect power failure. However, he returned to the air a minute later, with an apology, reporting that a snake had appeared, crawling out from behind his transmitter. He broke off in the middle of a word because at that moment the snake appeared 18 inches from his face. Our man went off the air, grabbed a machete, killed the snake and returned to the interrupted morning report. Probably the snake had found a warm spot to sleep behind the transmitter and was awakened by the operator's activity. Our other operators reported regular battles with insects and other pests, but no dangerous animals. Though many strange and dangerous-sounding noises were heard at night, our weapons were never used.

Shortly after the survey began, we were interrupted by an erupting volcano. Near the city of Antigua, former capital of Guatemala and about 12 miles from Guatemala City, lies a range of volcanoes. One in particular, Mount Fuego (Fire Mountain) is active and known to erupt at times. It did so for us. We learned first-hand that volcanoes not only spill hot molten lava down their sides, but also shoot tons of dust into the air. Most of the dust is very fine, and the entire area, including Guatemala City, was covered with it. Pellets the size of marbles also fell on the outskirts of the city. The rumbling and roaring were clearly audible in Guatemala City, and the fires visible at night. Lava dust is relatively magnetic, and so fine that it penetrated the smallest of cracks and crevices in our equipment. We had to clean the plane and all gear thoroughly before proceeding with the survey. We were actually engaged in a flight on the morning of the eruption and discovered the electronic gear was not functioning. While the eruption continued for about a week, we were kept from our work only for the first two days.

While the difficulties of this survey were considerable, we received excellent assistance from the Guatemalan government and the oil companies, and were pleased to learn that our data were acceptable and of high quality. At the completion of the field work, all data sheets were returned to Philadelphia for further computation and analysis. The entire survey and all office computations had been completed, and final maps delivered to the clients, in less than a year.

As of 1960, the Guatemalan government is conducting surveys by airborne profile recorders to produce topographic maps of the Peten area, and Aero Service has conducted surveys of the Guatemala type in Alaska, Surinam, and Egypt, as well as other countries.

MAPPING NEWS

KENTUCKY

The availability of ground water in the Blue Grass region of Kentucky is described in eleven hydrologic atlases published by the Geological Survey. Each atlas consists of three sheets, one outlining the surface geology, a second showing areas of available ground water, locations of wells and springs and giving quality of water data, and the third tabulating geologic information and summarizing the lithology, topography and water-bearing character of the rocks. The Hydrologic Atlases HA 15 through HA 25 (scale 1:125,000) are available at $1 per copy from the Geological Survey.

UNITED STATES

Sheet 1 of a new map outlining the numerous coal fields of the United States, except Alaska, has been published by the Geological Survey. Sheet 2, covering Alaska, will be published at a later date. Prepared by James Trumbull, the map is scaled at 1:5,000,000 and can be purchased from the Geological Survey at $1.50 each.

INDUS RIVER

Hunting Survey Corporation Ltd., of Toronto has been participating with its English Associate, Hunting Surveys Ltd. under contract to Tipton and Kalmbach, Consulting Engineers of Denver, Colorado, in an extensive topographical mapping project covering areas of Pakistan drained by the Indus River.

The survey and subsequent mapping, at a scale of 1:3,600, is in preparation for the construction of dams and a water control system on the Indus watershed in Pakistan.

ANTARCTICA

The U. S. Geological Survey is currently completing the compilation of ten maps of the Horlick Mountain area, three of the Sentinel Mountain area, and three of the Executive Committee Range; compilation of six maps of the McMurdo area and four in the Thurston area have been started. All of these maps will be published at a scale of 1:250,000. In addition three maps at a scale of 1:500,000 along the Wilkes Land coast of East Antarctica have just been published. These latter maps are part of a series prepared from photography obtained during the U. S. Navy Highjump expedition in 1947. Eight maps of this set were published in 1956.

The Geological Survey is also in the process of preparing a multicolored plastic relief model of Antarctica which is expected to be completed this year. The model will be at a horizontal scale of

1:10,000,000 with an exaggerated vertical scale, and will consist of two sections. The lower section will show the submarine floor, sub-ice topography and ice-free mountain areas. The upper and removable section will show the relief of the continental ice mass and the sea level surface. The projections of mountain masses through the ice will also be shown on the upper section. The tips of Australia, Africa, South America, and New Zealand will be included. This will be the first such model of its kind ever produced and should be of value to scientists and educators as a ready means of studying the major topographic features of Antarctica, as well as the intercontinental relationships. (From remarks of William A. Radlinski before the American Congress on Surveying and Mapping, March 24, 1961.)

NEW YORK GROUP

The fascination of entering a door marked No Admittance added zest to the very interesting program of the third meeting attended by the New York Geography and Map Group.

Held in the Explorers' Club, normally out of bounds to females, this meeting was arranged jointly with the Society of Women Geographers.

The first two speakers, Wilma Fairchild and Nordis Felland, reported on the International Geographical Congress held in Stockholm in August, 1960. Mrs. Fairchild concentrated on the exhibits and the exciting social aspects of the meeting and made it sound like a ball. Miss Felland focussed on the symposia and excursions available, and told of her own trip to North Cape, on top of the world.

Ena Yonge's report dealt with the International Congress of the History of Discoveries, in Lisbon. Organized by Portugal, the Congress celebrated the 500th anniversary of the death of Prince Henry, the Navigator. After outlining the activities of the Congress (at which she read a paper which was well received) Miss Yonge took the group, via excellent slides, through parts of Portugal and Spain. As victims of the worst weather New York has had in years, the group was particularly happy to see scenes in which the sun was shining!

Substantial refreshments were served before the meeting got under way and early arrivals availed themselves of the opportunity to explore the Explorers' Club.

Rose Z. Sellers

BOGGS AND LEWIS

The Classification and Cataloging of Maps and Atlases by Boggs and Lewis, which was published by SLA in 1945, is out of print and has been for some time. However, University Microfilms, of Ann Arbor, Michigan, have Association permission to supply photographic paper copies; they are available at $9.65 each plus postage.

PERSONAL NOTES

R. A. SKELTON, Superintendent of the Map Room and Deputy Keeper of the British Museum spoke on "Map Workshops of the Renaissance and the Discovery of America" at the Yale University Library on February 28 and at the Library of Congress on March 8.

Monday, March 6, ARCH C. GERLACH and RICHARD W. STEPHENSON of LC's Map Division discussed "Maps and Atlases: The Cartography of the Civil War" on the Classroom 9 program of Station WTOP-TV.

ROSE Z. SELLERS has written "Prompted by Pride" for the Wilson Library Bulletin of March 1961, v. 35, no. 7.

BOOK REVIEWS

Antique Maps of the World in Color. New York, Sterling Publishing Co., Inc., 1960. $15.00 for the ring-bound edition and $17.50 for the side-sewn de luxe library edition.

The enthusiasm and inspiration as well as the errors in copying by the geographers and cartographers of the 16th to the 19th centuries are represented in a collection of 36 maps reproduced by the Sterling Publishing Company. The low cost maps (less than 50 cents each) which may be easily removed from the binder for decorative use, should do much to popularize the old maps with their undeniable charm and interest.

Mercator established the modern school of map making. It was he who founded the Dutch School, gave the name "atlas" to a collection of world maps published by his own family, by Ortelius, Blaeu and others. Early editions were printed in Latin with later copies translated into French, Dutch, German, Italian and English. The perfection of wood and copper engraving plates and the preparation of artisitc and attractive maps spurred their production and acceptance. The four maps by Mercator, three by Ortelius and two by Blaeu are characteristic of the general type of maps of the 16th century representing the known world of the day.

Other maps of interest include a 1695 sailing chart of the English Channel by Jaillot, one of the post roads of France by Vaugondy, biblical maps by Ortelius and political maps of Britain, France and Scotland.

De Bry, Speed, Hondius, de Fer, Seutter, d'Anville and Cary are representative of later well known mapmakers. The introduction includes brief descriptions of their works as well as those of Mercator, Ortelius and Blaeu.

The maps, which appear to have been selected at random and without

a central theme, have been chosen with a good eye for color. The reproductions provide a collection of uniform size.

Particularly well done and representative of a basic understanding of the maps, coupled with thorough research are the descriptive notes attached to each. Those which are copies of recognized originals and those that contain errors are so described. There is no attempt to mislead the reader.

Catherine I. Bahn
Library of Congress

Dodge, Ernest S., Northwest by Sea. New York, Oxford University Press, 1961. $6.50

Ernest Dodge, Director of the Peabody Museum of Salem, Massachusetts and editor of the American Neptune, in Northwest by Sea has written a fascinating and useful book. It is a history of Northwest Passage and related voyages, written by a fine scholar who writes beautifully, and has a gift for choosing from an ocean of available facts, the truthful, romantic and telling ones. The span of his book is wide, from the Cabots and Cortereals, through the Franklin Search to the Nautilus and Skate voyages.

Dodge has a gift for characterizing an explorer and pointing up the significance of his voyage in relation to his own time and to ours. Instead of meeting the usual rather dreary repetitious listings of ships, sailings and place names which books of this type often display, the reader finds himself weighing anchor, sailing in a stiff breeze and vicariously suffering and rejoicing with the seafarers. Just often enough to enhance the flavor and texture of his account, the author uses direct quotations from first hand narratives. He has delved into several historical controversies and mysteries. Despite his utilization of complicated historical sources his text remains smooth and uncluttered and his notes provide the sources on which he has based his conclusions.

To the delight of both librarians and students of the history of polar exploration, Dodge has compiled a wonderfully useful chronological table of voyages which includes the name of the leader of each expedition, the name of his ship and the date of sailing and return. Mr. Dodge's Notes are as admirable and sometimes as interesting as his text, often detailing a scholarly quest that parallels the sea voyages he deals with. The handsome, remarkably clear maps of Veronica Ruzicka contribute no little to a book whose outside delights the eye and whose inside pleasures and informs the mind.

Evelyn Stefansson
Dartmouth College Library

Colles, Christopher, A Survey of the Roads of the United States of America 1789. Edited by Walter W. Ristow. Cambridge, Mass., The Belknap Press of the Harvard University Press, 1961. xii, 227 pp., illus., facs. $7.50.

The grandfather of American road map publishers was Christopher Colles who, in 1789, began issuing A Survey of the Roads of the United States of America to subscribers. These maps, three strips to each of eighty-three plates, delineated the major roads of the country from Albany, New York to Yorktown, Virginia on the scale of 1 3/4 inches to the mile. Homeowners, taverns, mills, churches, graveyards, crossroads, and bridges were faithfully indicated. The fact that only fourteen complete copies of Colles' Survey of the Roads survive in the nation's libraries has not lessened its stature as one of the very important post-Revolutionary American publications--although many scholars are perhaps not familiar with it because of its great scarcity.

This need no longer be a problem for historians, geneologists, and collectors. The Belknap Press of the Harvard University Press has reproduced the Colles atlas as the latest addition to its "John Harvard Library" series which is designed "to make significant books and documents from the American past available once more to scholars and the general public." A fine example of book-making, the facsimile is further enhanced in usefulness by the editorial work of Walter W. Ristow, Assistant Chief of the Map Division of the Library of Congress.

Part One (116 pages) of the book is devoted by Dr. Ristow to an examination of the known facts of Colles' life, the source materials used in compiling the road book, a bibliography of Colles' works, a general bibliography, and an inventory of extant copies of the Survey of the Roads. Part Two consists of the facsimile, an alphabetical index to landmark features such as blacksmith shops, mills, and taverns. The two lists total eight hundred names. Tipped inside the back cover is a folded map of the Eastern seaboard as it was in 1789, serving as a useful index to the separate plates.

In addition to the built-in utility of the facsimile itself, special notice must be taken of the important research on the state of geography and cartography in the early years of the Republic which Dr. Ristow places before us as background to Colles' work. With the obvious problems of living day to day in a tight economy and during unsettled times it is a wonder that Christopher Colles was able to produce the collection of maps he did and it is no wonder that many of his other schemes such as building an inland waterway to the west in upstate New York were conceived too early, materializing only years after he had passed from the scene.

George R. Dalphin
Dartmouth College Library

Holmes, J. MacDonald, The Geographical Basis of Keyline. Angus & Robertson Ltd., 221 George St., Sydney, Australia. 1960. 52 pp., 11 photographs, 7 diagrams. 6s.6d.

In an unusually readable but scholarly booklet, Professor Holmes presents a concept and describes techniques which have been in use eight years in Australia to make nature assist the farmers. Keyline planning identifies the limits of valleys within which farmers can work economically and encourages the discovery and development of every renewable resource of the landscape to produce a state of balance which will be in conformity with the land's topography, soil and climate.

Arch C. Gerlach
Library of Congress

Levorsen, A. I., Paleogeologic Maps. San Francisco, W. H. Freeman Co., 1960. 174 pp., maps, diagrams. $6.00.

This concise little volume, by an expert and pioneer in the field, fills a gap in the geological mapping literature. The paleogeological map is, of course, a geologic map of the outcrops lying immediately below a surface of unconformity, and should not be confused with the paleogeographic map, which shows land-sea relationships at a time that sediments are being deposited. Paleogeologic maps, including such specialized varieties as palinspastic and paleotectonic maps, assist in understanding past geologic events, and may be especially useful to the petroleum geologist interest in such problems as the wedge-out of sediments. The first third of this book deals with principles. In the remainder the author applies those principles to the construction and use of paleogeologic maps of some thirty selected areas, ranging in size from small oil fields to continental masses. Maps and diagrams are clear and abundant, and there is a well selected bibliography.

Mark W. Pangborn, Jr.

Polish Academy of Sciences. Institute of Geography. National atlases; sources, bibliography, articles; completed by J. Drecka and H. Tuszynska-Rekawek under direction of Stanislaw Leszcycki. Warsaw, 1960. 56 pp. (Dokumentacja geograficzna, zeszyt 4)

The compilers of this bibliographic document have made a welcome contribution to the subject of national atlases. Their work is based upon the collection of books and periodicals in the library of the Institute of Geography in Warsaw and the examination of over 1,000 atlases in Polish libraries. One hundred and thirty atlas titles are cited, many of which include notes giving reference to sources in which the atlases were reviewed.

In selecting their titles the authors acknowledged that few atlases measure up to the standards of true national atlases in accordance with

the criteria of such authorities as S. Leszczycki, K. A. Saliszcew, and O. Tulippe. Those fully meeting the criteria they marked with asterisks. There appears to be some confusion on this point because in the preface it is stated that "Atlases corresponding fully with those criteria were limited to some dozen...", yet forty titles are so marked.

Essentially, the rules used for the selection of atlases were: 1) The atlas had to deal with only one country within its contemporary boundary. However, exceptions were made to include atlases of major political divisions of a country with great territory, such as the United States or the Soviet Union or China. 2) Its contents had to comprise at least three different maps presenting geographical environment, population, and economy. 3) It had to have scientific value.

Robert C. White
University of Illinois Library

Trewartha, Glenn T. The Earth's Problem Climates. Madison, Wisconsin, University of Wisconsin Press, 1961, 334 pp., $7.50.

For more than forty years meteorological material of a specifically synoptic nature has been accumulating at an increasing rate. Attempts to synthesize this sizeable collection in one book and on a world-wide scale for climatological use are very few and have necessarily been limited to broad, regional studies, neglecting the many real anomalies that exist within individual climatic provinces. By concentrating on the unique features found in regional climatology Professor Trewartha takes the reader directly to those problem cases needing vigorous treatment for solution; thus his book is a valuable supplement to the more usual climatological texts of regional scope.

The Earth's Problem Climates uses Trewartha's earlier simplification of the Koeppen system for regional delimitation, but Thornthwaite's classification is also brought in occasionally for additional definition. Individual regional climates are first treated statistically, or statically, graphically showing their inherent unique features. The anomalies that are thereby revealed are then discussed by what the author calls a dynamic approach but which appears to this reviewer to be primarily synoptic, for this method mainly uses the tools of the synoptic meteorologist: weather maps of the surface and upper-air and atmospheric soundings. Lacking a completely satisfactory theoretical explanation of the larger-scale dynamic processes of the general atmospheric circulation, dynamic controls are mentioned briefly and qualitatively.

The major regions of the earth are covered, but the discussions necessarily differ in detail, reflecting the amount and nature of the material available. In one area mapped values of convergence and divergence provide the genetic tool, in another a frequency tabulation of weather types, while a third might relate preferred tracks of low

pressure centers.

Diagrams and maps are clearly presented. One sometimes feels the need for additional graphic material but this lack is partially compensated for by the author's lucid style. Greater uniformity in unit systems should be used in future editions. The text annoyingly jumps from the English to metric system and back again, often on the same page: millimeters to inches, inches to millimeters, kilometers to miles, and so forth. More dangerous is the practice, perhaps an innovation in typographic style, of omitting degree units in all temperature discussions. Here the Fahrenheit scale appears to be used consistently throughout but in mentioning upper air temperatures and air temperature, water temperature differences there is cause for some confusion. The detailed Koeppen classification is occasionally brought into the discussion and therefore a summary of it would make a useful appendix. But these points are only minor distractions.

The author concludes his presentation of each anomaly or problem with suggestions as to the genetic processes that are probably involved. Final verification or contradiction is often left to the reader, and herein lies the chief value of the book. By summarizing current research on the world's climates through a kind of inventory of deficiencies, future investigations are encouraged along specialized lines of inquiry. From this book investigators in search of research topics should learn not only what must be done but they should also, by the author's fine example, recognize the continuing great value of the "general view" in regional climatology.

James M. Havens
Department of Geography
Dartmouth College

Walker, D. S., The Mediterranean Lands. Methuen & Co., Ltd., London; John Wiley & Sons, Inc., New York, 1961. XXIII and 524 pages, 56 maps and diagrams, 64 plates, $6.75.

The primary purpose of this book is to fill the need for a text to be used at the level of secondary school and first year of college. This work is sufficiently sophisticated, however, to serve as a reference for university students as well.

Taken as a whole, Walker's presentation on the Mediterranean lands is generally up to date. It is written in a simple and concise style and the numerous illustrations are well chosen, particularly those illustrating various types of land forms and land uses. There are several maps for each large country.

Following a brief introduction and acknowledgement, there is a general section which deals with the Mediterranean Sea--its origin and shape, the characteristics of its water masses and its fisheries, together with a description of the climate, vegetation and soils of the

bordering lands. This first section represents only about one tenth of the book. The remainder is divided into four regional parts--(1) Western Basin: Europe; (2) Western Basin: Africa; (3) The Balkan Peninsula; and (4) the Near East.

Within each of the four regional parts, the approach includes a study of the geologic structure, the climate, and the basic economic and social patterns. For the larger countries in each section an economic summary with statistical tables is added. Where the country is only partially in the Mediterranean area (as in the case of France), the non-Mediterranean sectors are not treated.

There seems to be a disproportionate emphasis on certain areas. For example, the section dealing with Italy is as long as the sections on the Maghrib and the Balkan Peninsula together, or as the whole Near East from Turkey to Libya. Other flaws include the lack of maps dealing with the population distribution for all the Mediterranean lands. Also, there are some inaccuracies such as Walker's mention of the railroad through the Tenda Pass which has remained destroyed since World War II and the division of Algeria into only three departments instead of fifteen in 1959.

On the whole, however, D. S. Walker is to be commended for a sound piece of scholarship.

Jean-Claude Thomas
Department of Geography
University of Maryland

CARTOPHILES

The winter meeting of the New England Cartophiles was held at the Winsor Map Room, Widener Library, Harvard University, on March 14, 1961. Because of the inclement weather, only nineteen were present; but the meeting, an "amateur" night was a successful one. The staff of the Map Room exhibited some of their new acquisitions, and several members brought new maps of interest. Through the kindness of Mr. Mapes, the Rand McNally Christmas map was distributed to those present.

Robert W. Lovett

NEW BOOKS

Compiled by Robert C. White

Barnes, William C. Arizona place names. Rev. and enl. by Byrd H. Granger. Tuscon, University of Arizona Press, 1960. 519p. illus., maps. $10.00. Well organized; contains nearly five pages of map bibliography.

Benham, F., and Holley, H. A. A short introduction to the economy of Latin America. Issued under the auspices of the Royal Institute of International Affairs. London, Oxford University Press, 1960. 169p. maps. $2.90. An account of resources, production, and trends.

Church, Martha. The spacial organization of electric power territories in Massachusetts. Chicago, University of Chicago, Dept. of Geography, 1960. 187p. maps. (Research paper no. 69) $4.00. A geographic study of power production and territorial organization.

Debenham, Frank. Antarctica: the story of a continent. Macmillan, 1961. 264p. illus. $5.50. The author was a geologist on Scott's second expedition.

Elkins, Thomas H. Germany. London, Christophers, 1960. 272p. illus., maps. A text for the college geography student.

Fawcett, Charles B. Provinces of England; a study of some aspects of devolution. London, Hutchinson [1960] 192p. maps. $3.00. Professors East and Woodridge have revised a regional geography which was first published 40 years ago.

Fitzsimmons, Thomas, and others. USSR, its people, its society, its culture. New Haven, HRAF Press [1960] 590p. maps. $8.50. (Survey of world cultures) A factual presentation to make one understand Russia and the Russians.

Friedmann, Fredrick G. The hoe and the book: an Italian experiment in community development. Ithaca, N. Y., Cornell University Press [1960] 158p. $3.00. The author tells what was done by a voluntary association of Italians in neglected areas of southern Italy.

Hammond, C. S. and Co., and Newsweek. The five worlds of our lives. Pre-publication price $12.95. To be published in April.

Isard, Walter. Methods of regional analysis; an introduction to regional science, by Walter Isard in association with David F. Bramhall [and others. Cambridge] Published jointly by the Technology Press of the Massachusetts Institute of Technology and Wiley, New York [1960] 784p. illus. (Regional science studies [4]) $9.50. Deals with techniques.

Israel, Saul, and others. World geography today. New York, Holt [1960] 536p. illus. $5.56. A high school text.

Jones, Emrys. A social geography of Belfast. London, Oxford University Press, 1960. 299p. illus., maps. $4.90. Presents a particular theory of city growth.

Kenyon, James B. Industrial localization and metropolitan growth: the Paterson-Passaic district. Chicago, University of Chicago, Dept. of Geography, 1960. 224p. illus., maps. (Research paper no. 67) $4.00. A study of industrial change for use in transportation planning in the Port of New York Authority District.

Northeastern Illinois Metropolitan Area Planning Commission. A social geography of metropolitan Chicago. Chicago, 1960. 97p. A study of growth and structure of a six-county area.

Paterson, J. H. North America; a regional geography. [London] Oxford University Press, 1960. 454p. illus., maps. $5.25. Text book for undergraduates.

Phillips, Mary V. World geography for high schools. Philadelphia, Winston [1960] 504p. illus., maps. $5.20. An attractive and interesting textbook.

Platt, Raye R. Finland. [Prepared with the cooperation of the American Geographical Society] Garden City, N.Y., Doubleday [1960] 64p. illus., maps. (Around the world program) $1.15.

Raisz, Erwin J. Landform maps, a method of preparation. [Worcester, Mass., Clark University] 1959. 23p. illus. The author gives particular attention to techniques he used in preparing his map Land forms of Mexico.

Resources for the Future. Energy in the American economy, 1850-1975, by Sam H. Schurr and Bruce C. Netschert. Baltimore, Johns Hopkins Press [1960] 774p. $12.50. A comprehensive study of the role of energy in our economy.

Sharp, Andrew. The discovery of the Pacific Islands. Oxford, Clarendon Press, 1960. 259p. maps. $6.30. A contribution to the history, geography, and ethnology of the Pacific.

Simoons, Frederick J. Northwest Ethiopia; peoples and economy. Madison, Wis., University of Wisconsin Press, 1960. 250p. illus., maps. $5.00. The part played by cultural attitudes toward the use of environment is emphasized.

Stamp, L. Dudley. Our developing world. London, Faber and Faber [1960] 195p. illus., maps. $2.95. A geographer looks at some of the problems, including population, land, food, and agriculture, in our very rapidly developing world.

Todd, Alden L. Abandoned; the story of the Greely Arctic Expedition, 1881-1884. New York, McGraw-Hill [1961] 323p. illus., map. $5.95. Experiences of members of the expedition.

U. S. Agricultural Research Service. Boundaries and records in the territory of early settlement from Canada to Florida, with historical notes on cadaster and its potential value in the area. Washington, 1960. 73p. map. Explains the cadaster as the remedial measure of the boundary and record problems in the Eastern States.

U. S. Soil Conservation Service. Soil classification, a comprehensive system. [Washington, U. S. Govt. Print. Off., 1960] 265p. illus. "This book gives the present status of a comprehensive system of soil classification being developed by the Soil Survey staff."

Wagner, Philip L. The human use of the earth. Glencoe, Ill., Free Press [1960] 270p. $6.00. A geographical and ecological study.

DIRECTORY OF SPECIAL LIBRARIES AND INFORMATION CENTERS

The phenomenal growth of research in all fields of knowledge has multiplied the problems of the information seeker. There is an urgent need for a new guide to the centers of information whose number has correspondingly increased in recent years.

To meet this need, Gale Research Company, 2200 Book Tower, Detroit, Michigan has undertaken a comprehensive survey of special libraries, information centers and documentation centers in the United States and Canada. The results of this survey will be published in 1961 as the first edition of the DIRECTORY OF SPECIAL LIBRARIES AND INFORMATION CENTERS. This directory will be issued triennially by the Gale Research Company, publisher of the Encyclopedia of American Associations, Directory of University Research Bureaus and Institutes, and other reference books. Dr. Anthony T. Kruzas of the faculty of the Department of Library Science, University of Michigan, will serve as editor.

The projected directory will supply detailed data on all types of information units in business and industrial organizations, governmental agencies, educational institutions, research institutes, and trade and professional associations. Its main objectives will be to provide current and continuing listings of specialized repositories of knowledge in all subject fields; to identify major collections and key information personnel; to facilitate interchange of resources and

to promote cooperative efforts among them.

The entry for each facility will include the following data:

1. Name and address
2. Name of sponsoring institution or organization
3. Name and title of person in charge
4. Names and positions of other professional staff members
5. Size of professional and non-professional staff
6. Annual budget
7. Year founded
8. Important subjects represented in the collections
9. Size and composition of collections
10. Bulletins, lists and other serial publications issued by the unit
11. Services available to outside agencies

A detailed subject index will be provided to facilitate the location of collections, libraries and information services in specific fields.

NEW MAPS

Compiled by Charles W. Buffum

AFRICA. Main roads of sub-Equatorial Africa. Scale [ca. 1:4,000,000] Johannesburg, Pan-African Touring Club [1960] map 114 x 82 cm. Reproduced photographically.
"Black top roads...are those existing at the end of 1959."

ATLANTIC OCEAN. Underwater relief model, North Atlantic Ocean. Scale 1:5,500,000; exaggeration 20:1. [Mercator projection] Prepared by U. S. Naval Photographic Interpretation Center Dec. 1960 from U. S. Navy hydrographic charts. [Washington] Dept. of the Navy, Photographic Interpretation Center [1960] col. relief model 134 x 195 cm.
"NPIC 910/60-S." Vinyl plastic.

BRITISH COLUMBIA. British Columbia relief map. Scale: 30 miles to 1 inch or 1:1, 900,800. Produced by Geographic Division, Surveys and Mapping Branch, Department of Lands and Forests. Victoria, Department of Lands and Forests, British Columbia, 1960. col. map 74 x 92 cm. Relief shown by hypsometric tints and contours.
Insets: Physiographic subdivisions.--Annual precipitation.

CARIBBEAN AREA. Countries of the Caribbean, including Mexico, Central America and the West Indies. Scale 1:6,000,000. Washington, National Geographic Society, 1960. col. map 60 x 101 cm. With 10 insets.
Second revision of the map issued with the magazine in Oct. 1947.

CHILE. Mapa geologica de Chile. Escale 1:1,000,000. [Por] Instituto de Investigaciones Geologicas, con la contribucion de la Empressa Nacional del Petroleo y del Instituto de Geologia de la Universidad de Chile. Santiago, Chile, Impreso en el Instituto Geografico Militar, 1960. col. map 147 x 181 cm. in 3 parts (7 sheets 77 x 60 cm. or smaller)
Inset: Territorio Antartico Chileno, 1:7,500,000.

HAWAII. A pictorial map of the Hawaiian Islands, the United States' fiftieth state. Scale [ca. 1:675,000] Designed and drawn by Ernest Dudley Chase. West Harwich, Mass., E. D. Chase, c. 1960. col. map 51 x 69 cm.

LOUISIANA. Generalized geological map of Louisiana, May 1959. Scale [ca. 1:1,250,000] Leo W. Hough, state geologist. [Baton Rouge] Louisian Geological Survey [1959] col. map 41 x 43 cm.

MEDITERRANEAN AREA. Classical lands of the Mediterranean. Scale 1:2,750,000. Washington, National Geographic Society, 1960. col. map 53 x 78 cm. Insets: a. The world of Homer, ninth century B.C.--b. The world of Herodotus, fifth century B. C.--c. The world of Strabo, first century A.D.--d. Ancient Athens.--e. Ancient Rome.--f. The Greco-Roman world.
Revison of the map issued with the December 1949 magazine.

NEW JERSEY. The Province of New Jersey, divided into East and West, commonly called the Jerseys. [ca. 1:425,000] Second edition with considerable improvements. Engraved & published by Wm. Faden, Charing Cross, December 1st, 1778. [Newark] The New Jersey Historical Society, 1960. col. map 78 x 57 cm.
"Longitude...from Philadelphia."
Accompanied by "Note on William Faden's map." (1 l.) ($7.50)

NEW YORK (CITY). New York and vicinity. Scale 1: 24,000. Washington, U. S. Geological Survey, 1961- col. maps 122 x 93 cm. Index map in margin of each sheet. To be complete in 8 sheets. Sheets issued to date: Hempstead; Paterson; Staten Island.

NORTH AMERICA. Bird migration map of North America. Scale [ca. 1:36,000,000] Paintings by Albert Gilbert. [Ed. by] Robert Hagey. Copyright by Rand McNally & Co. Wilmette, Ill., Modern Educational Aids, ©1960. col. map on sheet 106 x 83 cm.
Shows principal flyways. 14 marginal maps, with pictures of birds, show breeding range, winter range, and migration routes.

OHIO. Oil and gas fields of Ohio, including underground storage areas, July, 1960. Scale [1:380,160] Original map by John A. Bownocker and Wilber Sout, 1928; rev. by...George G. Shearrow and Theodore De Brosse, 1960. [Columbus] State of Ohio, Dept. of Natural Resources, Division of Geological Survey [1960] col. map 132 x 100 cm.
Includes table of "Oil and gas pools" keyed to map, and "Generalized section of rocks of Ohio" rev. by Warren L. Calvert, July, 1960.

SOUTHERN RHODESIA. Agro-ecological survey of Southern Rhodesia: Natural regions and areas, and related, farming systems. Scale 1:1,000,000; 15,782 miles to 1 inch. Compiled by V. Vincent and R. G. Thomas, Federal Ministry of Agriculture. [Salisbury? 1960] col. map 80 x 86 c.m.

UNITED STATES. Buying power map[s]...Urban and suburban areas... Scale 1:48,000. Pelham, N.Y., Sanborn Map Company, 1960-61. col. maps 55 x 42 cm. See Bulletin 40, 41, and 42. ($15.00 sheet)
The following cities not previously listed are available. Maps for a total of 50 cities are expected to be completed this year.

Baltimore	(3 sheets)
Cleveland	(3 sheets)
Columbus, Ohio	
Dayton, Ohio	
Indianapolis	
Pittsburgh	(3 sheets)
Providence-Pawtucket, R. I.	(2 sheets)
Rochester, N. Y.	
San Francisco-Oakland metro area	(6 sheets)
Syracuse, N. Y.	

USSR. Union of Soviet Socialist Republics. Scale 1:9,000,000. Washington, National Geographic Society, 1960. col. map 71 x 104 cm. Relief shown by hacures. ($1.00)

WORLD. The new portrait of our planet. [Scale not given. By] Life [magazine. New York] Time, Inc. c1960. 4 col. maps on sheet 95 x 129 cm.

Includes 4 circular presumed views of the earth with water removed: Pacific, Atlantic, Arctic and Antarctic, showing relief especially of the ocean bottoms.

WORLD. Oxford wall maps. [Scales vary] Prepared by the Cartographic Dept. of the Clarenden Press by the enlargement of the equivalent Oxford School Atlas map[s. Oxford, Eng.] Oxford University Press, 1960. 12 col. maps on sheets 76 x 107 cm.

Relief shown by hypsometric tints and shading.

Contents: E. Africa, ca. 1:6,700,000. Zenithal equidistant projection.
N. Africa, Aden to Dakar, ca. 1:6,700,000. Zenithal equal-area projection.
Australasia, ca. 1:7,477,000 [sic] Zenithal equidistant projection.
British Isles, ca. 1:1,180,000. Conical orthomorphic projection.
Canada, ca. 1:6,700,000. Zenithal equidistant projection.
Eastern Europe, ca. 1:2,235,000. Conical orthomorphic projection.
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Far East, ca. 1:6,777,000. Conical orthomorphic projection.
Middle East, Pakistan and India, ca. 1:6,700,000. Conical orthomorphic projection.
South America, ca. 1:8,900,000. Transverse Mercator projection.
U.S.A. and Central America, ca. 1:6,700,000. Zenithal equidistant projection.
U.S.S.R., ca. 1:8,900,000. Conical orthomorphic projection.

WORLD. The world. Scale 1:39,283,200. Van der Grinten projection. Washington, National Geographic Society, 1960. col. map 72 x 106 cm. Insets: [Antarctic regions]--[Arctic regions]--The United Nations.--Population density.--Vegetation and land use.--International time zones. Revision of the map issued with March 1957 issue of the National Geographic Magazine.

WORLD. Planisphere terrestre suivant les nouvelles observations des astronomes. [ca. 1:80,000,000] Dressé par Mr. Cassini le fils. A Leide, Chez Pierre vander Aa [1713. St. Louis, Mo., Roy Wenzlick & Co., 1960?] col. map 43 x 52 cm.

North polar azimuthal equidistant projection. Title on outside when folded: One world. Title also in Latin.

"From an original in the map collection of Roy Wenzlick."

Text on verso.

Accompanied by note stating it is 11th of series of reproductions, issued as Christmas and New Years greeting.

WORLD. The Aero 12" relief globe in true raised relief. Scale [1:42,134,400] Made by Aero Service Corporation. Philadelphia, c1960. col. globe 31 cm. in diameter. Mounted on fixed semi-meridian on metal base. Colored to show generalized land use.

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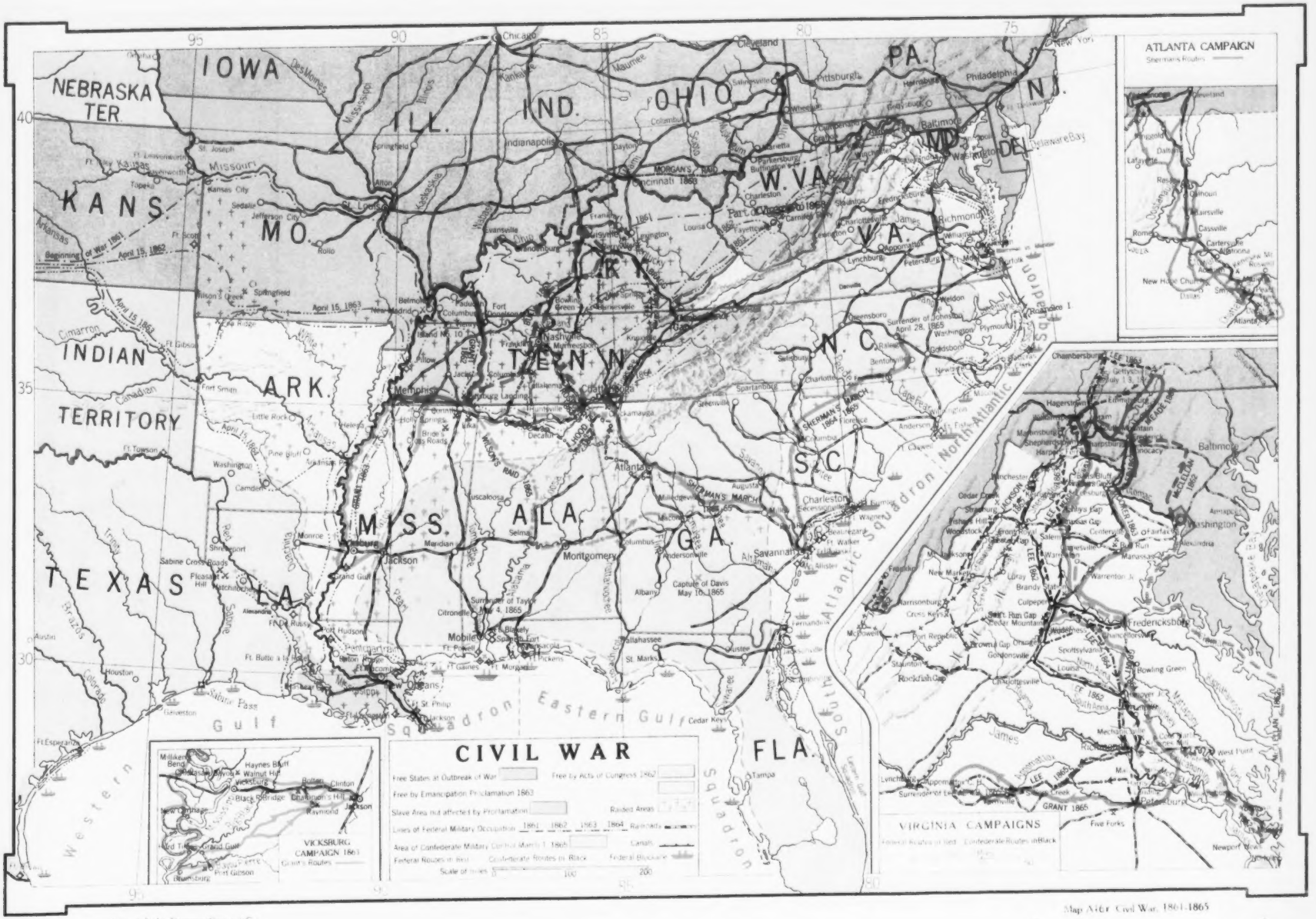

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